CLAIMS

1. A pipe joint with earthquake-proof function, wherein

a lock ring is accommodated in a lock ring accommodating groove formed at an inner surface of a socket of one pipe configuring said pipe joint,

a projection formed at an outer periphery of a distal end of a spigot of another pipe, configuring said pipe joint and being inserted to said socket, is configured to be able to engage with the lock ring from the socket inner side,

disengagement of the spigot from the socket is prevented as said lock ring is configured to be able to engage with said accommodating groove,

a tapered surface converging toward the opening side of the socket is formed on at least one of a portion of said lock ring engaging the accommodating groove and a portion of said accommodating groove engaging the lock ring, and

when a disengagement prevention force in a pipe axial direction for preventing the spigot from being disengaged from the socket by said engagement is transmitted from the accommodating groove to the lock ring through the tapered surface, a line of action of a component force of said disengagement prevention force in a direction perpendicular to said tapered surface passes the opening side of the socket of a contacting point between a socket bottom end part of the lock ring and the outer periphery of the spigot along the outer surface of the spigot.

2. The pipe joint with earthquake-proof function according to claim 1, wherein the tapered surface is formed at the portion of the lock ring engaging the accommodating groove, and an inclination angle of the tapered surface with respect to the spigot outer surface changes in

accordance with a distance in a radial direction from the spigot outer surface to said engaging portion.

3. The pipe joint with earthquake-proof function according to claim 2, wherein the inclination angle of the tapered surface with respect to the spigot outer surface gradually decreases as the distance in the radial direction from the spigot outer surface to the accommodating groove engaging portion increases.

4. The pipe joint with earthquake-proof function according to claim 3, wherein the inclination angle of the tapered surface with respect to the spigot outer surface decreases in steps.

5. The pipe joint with earthquake-proof function according to claim 3, wherein the tapered surface is a smooth curved surface in which the inclination angle with respect to the spigot outer surface decreases in a stepless manner.

6. The pipe joint with earthquake-proof function according to claim 3, wherein the tapered surface is a combination of an inclined surface having a linear transverse cross section that changes in steps and a smooth curved surface that changes in a stepless matter.

7. The pipe joint with earthquake-proof function according to claim 1, wherein

the tapered surface is formed on both the portion of the lock ring engaging the accommodating groove and the portion of the accommodating groove engaging the lock ring, and

when the lock ring is accommodated in the accommodating groove with said tapered surfaces not facing

each other, the tapered surface of the accommodating groove and the outer periphery other than the tapered surface of the lock ring contact and the lock ring is not able to be accommodated up to the bottom side of the accommodating groove, and thus the lock ring protrudes inward in the radial direction from the accommodating groove, the spigot projection contacts said protruding portion when inserting the spigot to the socket, and the spigot is not able to be inserted into the socket.

8. The pipe joint with earthquake-proof function according to claim 1, wherein

a sealing material is arranged in a compressed state between the socket and the spigot at the opening side of the socket of the lock ring,

a backup ring that presses against the outer peripheral surface of the spigot is arranged between the inner circumferential surface of the socket and the outer peripheral surface of the spigot at between the sealing material and the lock ring, and

the backup ring includes a small diameter part formed so as to be arranged on the inner side than said inner circumferential surface of the socket, and a large diameter part formed with a greater diameter than the small diameter part and preventing said sealing material in the compressed state from entering a gap between said inner circumferential surface of the socket and said small diameter part.

9. The pipe joint with earthquake-proof function according to claim 8, wherein a maximum outer diameter of the large diameter part is formed greater than the inner diameter of the inner circumferential surface of the socket, and when the backup ring is arranged at a position corresponding to the inner circumferential surface of the

socket, a portion of said large diameter part formed greater than the inner diameter of the inner circumferential surface of the socket pressing against said inner circumferential surface.

10. The pipe joint with earthquake-proof function according to claim 9, wherein a cut-out part is formed in the backup ring for deforming the large diameter part when the backup ring is arranged at the position corresponding to the inner circumferential surface of the socket.

11. The pipe joint with earthquake-proof function according to claim 9, wherein the backup ring includes a main body part configuring the small diameter part, and a projecting part configuring the large diameter part formed so as to project outward in the pipe diameter direction from the main body part.

12. The pipe joint with earthquake-proof function according to claim 9, wherein the backup ring is formed into a tapered shape from the large diameter part to the small diameter part.